

NEW COMBINATIONS IN NORTH AMERICAN *LATHYRUS* AND *VICIA*
(FABACEAE: FABOIDEAE: FABAEAE)

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ABSTRACT

Morphological and geographic variation in two *Lathyrus* and two *Vicia* species complexes is reviewed. The following new combinations are proposed: *Lathyrus nevadensis* S. Wats. var. *cusickii* (S. Wats.) Broich comb. nov., *Lathyrus lanszwertii* Kellogg var. *sandbergii* (T. White) Broich comb. nov., *Vicia ludoviciana* Nutt. ex T. & G. var. *leavenworthii* (T. & G.) Broich comb. nov., and *Vicia nigricans* H. & A. var. *gigantea* (Hooker) Broich comb. nov.

Key Words: Fabaceae, *Lathyrus*, *Vicia*, Leguminosae, Viciae, taxonomic changes.

Lathyrus L. and *Vicia* L. (Fabaceae: Faboideae: Fabae [Viciae]) are sister genera of papilionoid legumes each of about 150 species. *Lathyrus* in North America was last revised by Hitchcock (1952), and *Vicia* by Hermann (1960). Isely (1998) has summarized more recent taxonomic changes in both genera. Preparation of treatments of *Lathyrus* and *Vicia* for the *Flora of North America* has given me the opportunity to re-examine the taxonomy of both genera. As a result of this research, I propose taxonomic changes within two native *Lathyrus* species complexes and two nomenclatural transfers within *Vicia* so that all infra-specific *Vicia* taxa in North America be treated uniformly at the varietal level. The purpose of this communication is to describe the morphological and geographic variability within each of these species complexes and to publish four new nomenclatural combinations.

LATHYRUS NEVADENSIS S. WATS.

Lathyrus nevadensis s.l. occurs along the Pacific Coast of North America west of the Sierra-Cascade axis from Fresno Co., California, north to British Columbia and east of the Cascades in central and northeast Oregon, central Washington, and east into the Idaho panhandle. Chromosome evidence accumulated to date (Hitchcock 1952; Broich 1989) suggests that *L. nevadensis* is tetraploid at $2n = 28$. Three varieties including five races occur within this range (Table 1, Fig. 1): var. *nevadensis*, var. *parkeri* (St. John) C. L. Hitchcock, and var. *cusickii* (T. White) Broich comb. nov.

Lathyrus nevadensis var. *nevadensis* includes two races. One race consists of short (<3 dm), erect plants bearing 4–6 leaflets on leaf rachises ending in, at most, a short (<1 cm) bristle rather than a tendril, and with 2–4(6)-flowered racemes

of rather large (15–20 mm) flowers (*L. nevadensis* s.s.). A second race consists of sprawling or clambering plants up to 6 dm tall bearing leaves of 6–8(10) leaflets on rachises which end in a long, (>2 cm), often branched and prehensile tendril, and with racemes of 4–8 smaller (10–17 mm) flowers (*L. lanceolatus* Howell). The nevadensis race is more common in the southwestern part of the range from Fresno Co., California, north into the coast range forests of western Oregon; the lanceolatus race found throughout the range of the variety (Fig. 1) but is more common to the north and in the eastern foothills of the Cascades in central Washington.

In northwestern California and southwestern Oregon, the nevadensis race intergrades so completely with the lanceolatus race that some populations (or plants within populations) can be only arbitrarily assigned to one race or the other. Hitchcock (1952) noted this intergradation but maintained the two forms as separate subspecies (subsp. *nevadensis* and subsp. *lanceolatus* (Howell) C. L. Hitchcock). Isely (1992) concluded that the entire series of populations included in the two subspecies recognized by Hitchcock is best treated as one variety, var. *nevadensis*.

An analogous situation exists in northeast Oregon, southwest Washington, and adjacent Idaho. In the southern part of this range, there are populations of *Lathyrus* rather similar to the nevadensis race of *L. nevadensis* (as described above) but with white rather than blue flowers. Originally described as *L. cusickii* S. Wats., Hitchcock (1952) recognized these populations as *L. nevadensis* subsp. *cusickii* (S. Wats.) C. L. Hitchcock. In northern Idaho, there are white flowered populations vegetatively similar to the lanceolatus race of *L. nevadensis*. Described as *Lathyrus parkeri* St. John, Hitchcock (1952) recognized these populations as *L. nevadensis* subsp. *lanceolatus* var. *parkeri* C. L. Hitchcock.

TABLE 1. A KEY TO AND DESCRIPTIONS OF THE VARIETIES OF *LATHYRUS NEVADENSIS* S. WATS. S. L.

| Variety | Race ^{*1} | Plant height (dm) | Plant habit | Rachis length (cm) | Tendrils | Number of leaflets | Leaflet shape |
|---|--------------------|-------------------|-----------------------|--------------------|---------------------------|--------------------|---------------------|
| 1. Corollas blue-purple, wings lighter; plants of California, western Oregon, or western and central Washington | | | | | | | |
| <i>nevadensis</i> ^{*2} | <i>nevadensis</i> | 1-3 | erect | 2-5(6) | aristate | 4-6 | ovate to lanceolate |
| <i>nevadensis</i> ^{*2} | <i>lanceolatus</i> | 3-6 | sprawling or climbing | 4-10 | long, branched, prehensil | 6-8(10) | ovate to lanceolate |
| 1. Corollas white; plants of northeastern Oregon, extreme eastern Washington and Idaho | | | | | | | |
| 2. Leaf rachis 4-9 cm, leaflets 6-10, tendrils well developed; flowers, 5-10, 12-18 mm long | | | | | | | |
| <i>parkeri</i> ^{*3} | | 2-6 | sprawling or climbing | 5-10 | long, branched, prehensil | 6-8(12) | ovate to lanceolate |
| 2. Leaf rachis 2-5 cm, leaflets 4-6, tendrils reduced to bristles usually less than 1 cm long; flowers 2-4, 18-22 mm long. | | | | | | | |
| <i>cusickii</i> ^{*4} | broad leaflet | 2-4 | erect | 2-5(7) | aristate | 2-6 | ovate to lanceolate |
| <i>cusickii</i> ^{*4} | narrow leaflet | 2-4 | erect | 2-5(7) | aristate | 2-6 | linear |

^{*1} Details of racial differences and relationships are given in the text Description and distribution based on examination of:

^{*2} 567 specimens examined from WS, WTU, HSU, NY, RM, OSC, ORE.

^{*3} 82 specimens examined from WS, WTU, NY, OSC, ORE.

^{*4} 111 specimens examined from WS, WTU, NY, OSC, OR.

Isely (1992) merged these eastern white flowered forms into one variety — *L. nevadensis* var. *parkeri* (St. John) C. L. Hitchcock. However, there is little evidence of intergradation between the *parkeri* and *cusickii* forms in the region and I believe it is more appropriate to treat the white flowered variants of *L. nevadensis* s.l. as separate varieties: var. *parkeri* (St. John) C. L. Hitchcock and var. *cusickii* (T. White) Broich comb. nov.

***Lathyrus nevadensis* var. *cusickii* (S. Wats.) Broich comb. nov.** *L. cusickii* S. Wats., Proc. Amer. Acad. Arts Sci. 17:371. 1882. *L. nevadensis* subsp. *cusickii* (S. Wats.) C. L. Hitchcock, Univ. Wash. Publ. Biol. 15:44. 1952. TYPE: USA, Oregon, Union Co., dry mountain slopes, *Cusickii* s.n. (holotype GH, isotype ORE!). *Lathyrus pedunculatus* St. John, Proc. Biol. Soc. Wash. 41:195. 1928. Type: USA, Idaho, [Kootnei Co.?] Turner Creek, Lake Coeur d'Alene, *St. John et. al. 4281* (holotype WS!)

A linear-leafleted race of *Lathyrus nevadensis* var. *cusickii* exists (Table 1) and morphological intermediates between linear-leafleted and ovate-lanceolate leafleted races have been collected (C. L. Hitchcock 18982; Umatilla Co., Oregon; WTU!, WS!). While common in other species complexes of *Lathyrus* in North America, linear-leafleted variants have not been found elsewhere in the *L. nevadensis* complex. In addition, there have been a few blue-flowered variants of var. *cusickii* collected in the Kooteni Co., Idaho, in

the Coeur d'Alene area (= *L. pedunculatus* St. John). The evolutionary significance of these collections is unknown.

LATHYRUS LANSZWERTII KELLOGG

Lathyrus lanszwertii s.l. includes a series of populations ranging east of the Sierra Nevada and Cascade Range crests from southern Arizona north to British Columbia and eastward into Idaho, Montana, Wyoming, Utah, Colorado and New Mexico (Fig. 2). *Lathyrus lanszwertii* consists of a morphologically diverse collection of populations of varying degree of distinctness. The taxonomic treatment of these populations has had a complex history (Hitchcock 1952; Welsh 1965, 1978; Welsh et al. 1987; Barneby 1989; Isely 1992, 1998). *Lathyrus lanszwertii* is known to include both diploid ($2n = 14$) and tetraploid ($2n = 28$) populations (Hitchcock 1952), but the relationship between ploidy level and the morphological, ecological, and geographic variation within the complex is unknown. As conceived here, *L. lanszwertii* consists of five intergrading morphological variants (Table 2, Fig. 2): var. *lanszwertii*, var. *aridus* (Piper) Jepson, var. *pallascens* Barneby, var. *leucanthus* (Rydb.) Dorn, and var. *sandbergii* (T. White) Broich comb. nov.

Lathyrus lanszwertii s.s. (var. *lanszwertii*) is found on eastern slopes of the Cascade Ranges and the Sierra Nevada from Washington, Oregon, and California southeast into central Utah. *Lathyrus lanszwertii* var. *aridus* (Piper) Jepson, seemingly a diminutive form of var. *lanszwertii*

TABLE 1. EXTENDED.

| Leaflet length (mm) | leaflet width (mm) | Leaflet L/W ratio | Inflor-escence length (cm) | Number of flowers | Flower length (mm) | Flower color | Distribution |
|---|--------------------|-------------------|----------------------------|-------------------|--------------------|-----------------|--|
| 1. Corollas blue-purple, wings lighter; plants of California, western Oregon, or western and central Washington | | | | | | | |
| 20-45 | 10-20 | 1.4-2.4 | 2-5 | 2-6 | 15-20 | blue/ purple | w. of the Sierra-Cascades; Calif. to central Oreg. |
| 20-45 | 10-20 | 1.7-2.3 | 3-7 | 4-8 | 10-17 | blue/ purple | w. of the Sierra-Cascades; n. Calif. to B.C. and e. of Cascades in Wash. |
| 1. Corollas white; plants of northeastern Oregon, extreme eastern Washington and Idaho | | | | | | | |
| 2. Leaf rachis 4-9 cm, leaflets 6-10, tendrils well developed; flowers, 5-10, 12-18 mm long | | | | | | | |
| 30-50 | 15-25 | 1.6-2.0 | 6-12 | 5-10 | 12-16 | white | e. Wash. and adj. n. Idaho |
| 2. Leaf rachis 2-5 cm, leaflets 4-6, tendrils reduced to bristles usually less than 1 cm long; flowers 2-4, 18-22 mm long. | | | | | | | |
| 30-50 | 10-20 | 1.6-2.2 | 4-7(12) | 2-5 | 18-22 | white | ne. Oreg., se. Wash, adj. Idaho |
| 30-120 | 2-5 | 10.0-25.0 | 4-7(12) | 2-5 | 18-22 | white | ne. Oreg., se. Wash, adj. Idaho |

lacking tendrils, and has a similar range as var. *lanszwertii*, but is more commonly found at sites dominated by *Artemisia*.

In central Utah and to the north and east into Colorado and Wyoming populations of *Lathyrus lanszwertii* take a different appearance — shorter in stature, fewer leaflets, bearing white flowers — and have been described by Barneby (1989) as var. *pallescens* Barneby. Barneby (1989) also delimited southern Utah and northern Arizona populations of *L. lanszwertii* as var. *leucanthus* (Rydb.) Dorn, which includes two distinctly different races (formerly regarded as separate species): an ovate-lanceolate leafleted race (*L. leucanthus* Rydb. s.s.) and a linear leafleted race (*L. arizonicus* Britton).

To the north and east of the range of *Lathyrus lanszwertii* extralimital to Barneby's (1989) treatment of intermountain forms of *lanszwertii*, there are a series of populations traditionally treated as *L. bijugatus* T. White which are, in fact, quite similar to *L. lanszwertii* var. *leucanthus*. Morphological similarities between *L. bijugatus* and *L. lanszwertii* var. *leucanthus* are such that I believe that *L. bijugatus* should be included in *L. lanszwertii* s.l. Given the 1500 km disjunction between these northern populations and populations of var. *leucanthus* in Arizona, Colorado, and New Mexico, I hesitate to combine all into one taxon and so herein designate an additional variety of *L. lanszwertii*. *Lathyrus lanszwertii* var. *sandbergii* Broich comb nov. that also includes two distinctly different races: an ovate leafleted race (*L. bijugatus* T. White) and a linear leafleted race (*L. bijugatus* var. *sandbergii* T. White). There appears to be no difference in geographic distribution between these two forms; possible ecotypic differences have not been investigated.

Lathyrus lanszwertii* var. *sandbergii (T. White) Broich comb. nov. *Lathyrus bijugatus* var. *sandbergii* T. White. Bull. Torrey Bot. Club 21:457. 1894. TYPE: Idaho: Latah, Co., *J. H. Sandberg in 1892* (holotype NY!). *Lathyrus bijugatus* T. White, Bull. Torrey Bot. Club 21:457. 1894. TYPE: Idaho: Latah Co., *J. H. Sandberg in 1892* (holotype NY!; isotype WS!).

Species Excluded from *Lathyrus lanszwertii* Kellogg s.l.

I exclude from my understanding of *Lathyrus lanszwertii* s.l. the following taxa sometimes allied with the complex.

Lathyrus tracyi Bradshaw. While Jepson (1936) treated *L. tracyi* of northern California as a variety of *L. bolanderi* S. Wats. (= *L. vestitus* Nutt. ex T. & G.), Isely (1992, 1998) considered *tracyi* a variety of *L. lanszwertii*. *Lathyrus tracyi* includes both ovate- and linear-leafleted forms. Linear-leafleted populations certainly suggest a relationship to *L. lanszwertii*, but ovate-leafleted forms, the presence of mid-stem branching, and floral structure suggest to me that *L. tracyi* may be better allied to *L. holochlorus* (Piper) C. L. Hitchcock found to the north in the Willamette Valley of western Oregon.

Lathyrus brownii Eastwood. Hitchcock (1952) treated *L. brownii* of eastern California as a variety of *L. pauciflorus* Fernald while Barneby (1989) treated *L. brownii* as variety of *L. lanszwertii*. I believe its affinities may lie elsewhere, perhaps with *L. parviflorus* S. Wats. in Mexico.

Lathyrus laetivirens Greene. Hitchcock (1952) treated *L. laetivirens* as a variety of *L. leucanthus*

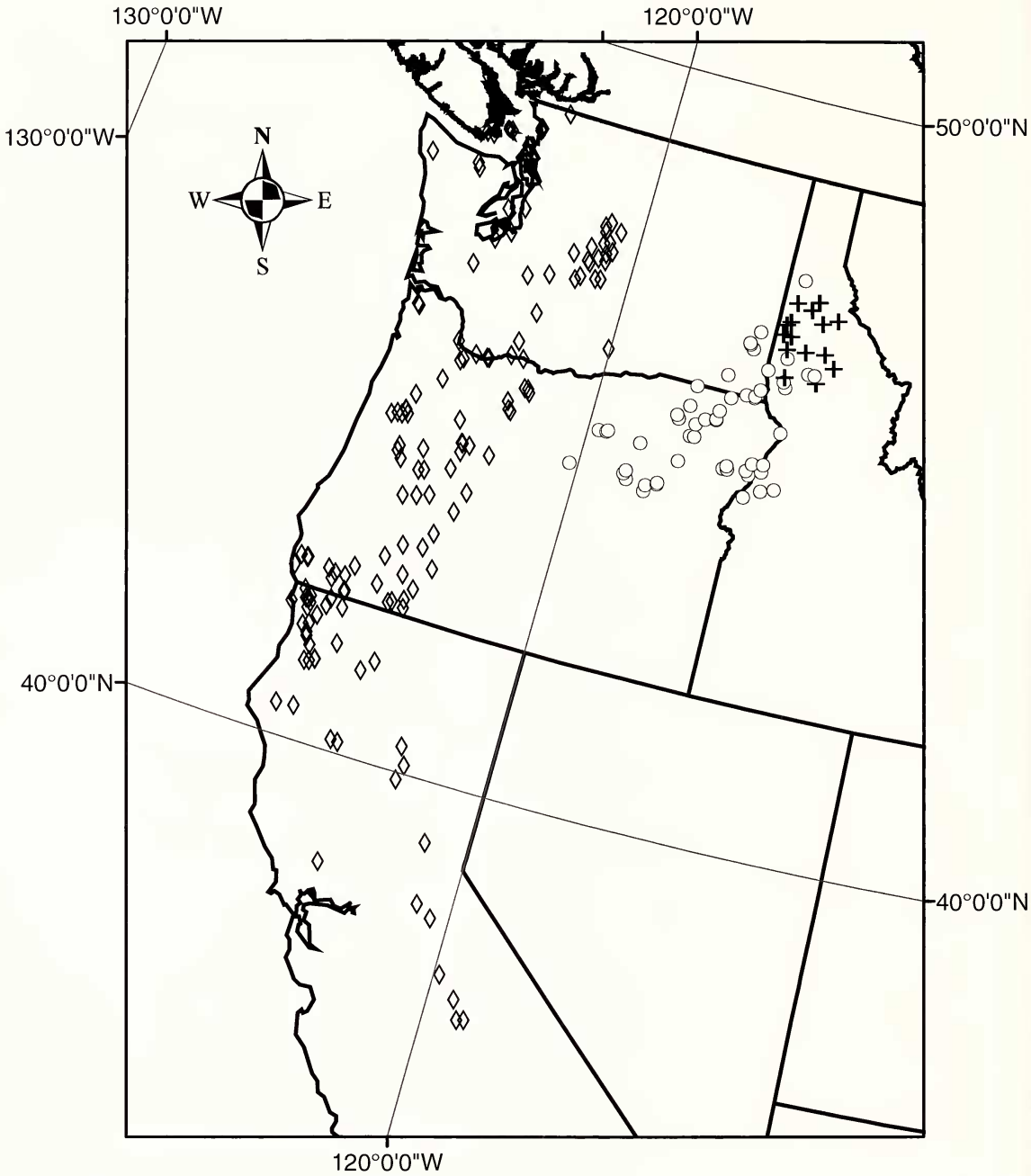


FIG. 1. Distribution of *Lathyrus nevadensis* S. Wats.: var. *nevadensis* = open diamonds; var. *cusickii* (T. White) Broich = open circles; var. *parkeri* (St. John) C. L. Hitchcock = crosses. Distribution base upon specimens from HSU, NY, ORE, OSC, WS, and WTU.

Rydb. and subsequently Welsh (1965, 1978) and Isely (1998) have included *laetivirens* within the *L. lanszwertii* complex in Utah. Barneby (1989), however, has maintained *L. laetivirens* at the specific level. I concur with Barneby. *Lathyrus lanszwertii* var. *pallescens* Barneby is distinct from *L. laetivirens* and I do not believe that the type of var. *pallescens* (Utah: Juab Co.: 20 June

1950, *A R. Kurckeborg* 4496, NY!) is referable to *L. laetivirens* as suggested by Isely (1998). Certain features of *L. laetivirens*, notably its strictly ovate leaflets and large white flowers, suggest it may be better allied with *L. nevadensis* S. Wats.

Until such time that their true relationships can be assessed more carefully, it is my belief that *Lathyrus tracyi* Bradshaw, *L. brownii* Fernald,

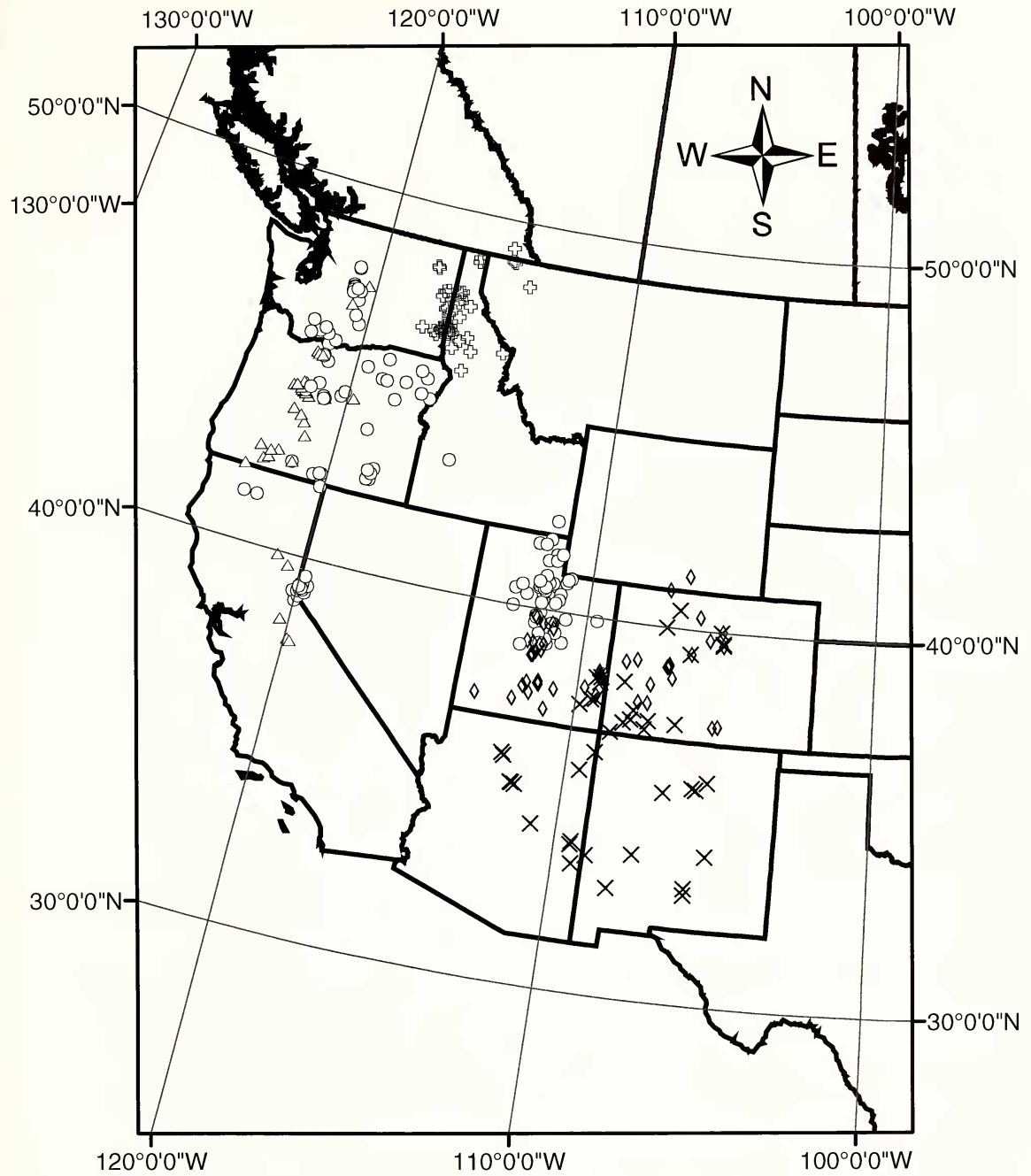


FIG. 2. Distribution of *Lathyrus lanszwertii* Kellogg: var. *lanszwertii* = open circles; var. *aridus* (Piper) Jepson = open triangles; var. *pallescens* Barneby = open diamonds; var. *leucanthus* (Rydb.) Dorn = X's; var. *sandbergii* (T. White) Broich = open crosses. Distribution base upon specimens from BRY, HSU, NY, ORE, OSC, WS, and WTU.

and *L. laetivirens* Greene be accorded specific status.

VICIA LUDOVICIANA NUTTALL IN T. & G.

Lassetter (1972, 1975, 1978, 1984) has shown that the three *Vicia* taxa formerly treated as

separate species (Hermann 1960) — *V. exigua* Nutt. in T. & G., *V. leavenworthii* T. & G., and *V. ludoviciana* T. & G. — are morphologically confluent and most likely part of one evolving species complex: *V. ludoviciana* T. & G. Lassetter (1984) described two subspecies: subsp. *ludoviciana* and subsp. *leavenworthii* (T. & G.) Lassetter

TABLE 2. A KEY TO AND DESCRIPTIONS OF THE VARIETIES OF *LATHYRUS LANSWERTHII* KELLOGG S. L.

| Variety | Race *1 | Plant height (dm) | Plant habit | Rachis length (cm) | Tendrils | Number of leaflets | Leaflet shape | Leaflet length (mm) |
|--|-------------------|-------------------|-----------------------|--------------------|---------------------------|--------------------|---------------------|---------------------|
| 1. Tendrils of upper leaves well developed, usually branched, prehensile, stems usually greater than 3 dm long, clambering | | | | | | | | |
| 2. Leaflets 8–10, corolla pink to purple, plants of central Washington and Oregon and eastern California east to central Utah | | | | | | | | |
| <i>lanswertii</i> *2 | | 4–8 | sprawling or climbing | 2–8 | long, branched, prehensil | 8–10 | lanceolate (linear) | 20–70 |
| 2. Leaflets 6–8, corolla white, plants of central Utah and western Colorado | | | | | | | | |
| <i>palescens</i> *4 | | 2–6 | erect to sprawling | 3–6 | long, branched, prehensil | 6–8 | lanceolate | 20–50 |
| 1. Tendrils of upper leaves reduced to simple bristles less than 1 cm long, stems often less than 3 dm long, erect. | | | | | | | | |
| 3. Leaflets 2–4, plants of eastern Wash. and adjacent Idaho | | | | | | | | |
| <i>sandbergii</i> *6 | <i>bijugatus</i> | 2–4 | erect | 0.5–2.0 | aristate | 2–(4) | ovate | 25–50 |
| <i>sandbergii</i> *6 | <i>sandbergii</i> | 2–4 | erect | 0.5–2.0 | aristate | 2–(4) | linear | 30–90 |
| 3. Leaflets 4–6; plants of central Washington south to Arizona and New Mexico | | | | | | | | |
| 4. Flowers 8–10 mm long, racemes from distal internodes on stems; plants of eastern flanks of the Cascade | | | | | | | | |
| <i>aridus</i> *3 | | 1–3 | erect | 2–4 | aristate | 4–6(8) | linear | 20–40 |
| 4. Flowers 10–15 mm long, racemes from the middle internodes of stems; plants of Utah, Colo., and Ariz. | | | | | | | | |
| <i>leucanthus</i> *5 | <i>leucanthus</i> | 1–3 | erect | 2–3 | aristate | 4–6 | ovate | 20–50 |
| <i>leucanthus</i> *5 | <i>arizonicus</i> | 1–3 | erect | 2–3 | aristate | 4–6 | linear | 35–70 |

*1 Details of racial differences and relationships are given in the text. Description and distribution based on the examination of:

*2 var. *lanswertii*: 333 specimens from WS, WTU, BRY, NY, OSC, ORE.

*3 var. *aridus*: 73 specimens from WS, WTU, NY, OSC, and ORE.

*4 var. *palescens*: 100 specimens examined from WS, WTU, NY, OSC, and ORE.

*5 var. *leucanthus*: 101 specimens examined from WS, WTU, NY, OSC, and ORE.

*6 var. *sandbergii*: 145 specimens examined from WS, WTU, NY, OSC, and ORE.

& Gunn. Traditionally, taxa within the complex were separated on the basis of inflorescence length, number of flowers, flower length, and, to a certain extent, geographic distribution

(Shinners 1948; Turner 1959; Hermann 1960). While taximetric evidence (Lassetter 1972) seems to support these distinctions, Lassetter (1972, 1984) also points out that, although "all taxa [in

TABLE 3. MORPHOLOGICAL VARIATION IN THE *VICIA LUDOVICIANA* NUTT. EX T. & G. COMPLEX. Data from Lassetter (1984).

| Variety | Race *1 | Plant height (dm) | Rachis length (cm) | Number of leaflets | Leaflet length X |
|--|---------------------|-------------------|--------------------|--------------------|------------------|
| 1. Leaflets generally 7–10; flowers opening after peduncles and internodes elongate, young fruit not present when flowers first open. | | | | | |
| <i>ludoviciana</i> *2 | <i>ludoviciana</i> | 1–20 | (2)4–7(10) | (5)8–11(13) | (6)12–16(25) |
| | <i>texana</i> | 12–19 | (2)3–5(7) | (7)8–10(13) | (9)13–21(36) |
| | <i>exigua</i> | 2–11 | (2)3–6(8) | (4)6–9(12) | (9)14–25(37) |
| | <i>producta</i> | 1–12 | (2)3–7 | (5)7–9(11) | (7)10–17(39) |
| | <i>laxifolia</i> | 1–8 | (2)3–6(8) | (6)7–10(13) | (6)9–17(26) |
| 1. Leaflets often 11–15; flowers opening before peduncles and internodes elongate, often containing young fruits when first open; leaflets often 11–15. | | | | | |
| <i>Levenworthii</i> *3 | <i>levenworthii</i> | 1–10 | (2)3–5(6) | (7)11–14(17) | (5)10–15(20) |
| | <i>Louisiana</i> | 3–12 | 6–9(10) | (10)11–13(14) | (13)15–23(25) |

*1 Details of racial differences and relationships are given in the text and in Lassetter (1984). Specimens examination:

*2 417 specimens examined from RSA, UNC, ISC, TEX, USCH.

*3 130 specimens examined from UNC, ISC, TEX, USCH.

TABLE 2. EXTENDED.

| Leaflet width (mm) | Leaflet L/W ratio | Inflorescence length (cm) | Number of flowers | Flower length (mm) | Flower color | Distribution |
|--|-------------------|---------------------------|-------------------|--------------------|--------------------------|--|
| 1. Tendrils of upper leaves well developed, usually branched, prehensile, stems usually greater than 3 dm long, clambering | | | | | | |
| 2. Leaflets 8-10, corolla pink to purple, plants of central Washington and Oregon and eastern California east to central Utah | | | | | | |
| 5-20 | 3-5(10) r | 3-9 | 2-6 | 10-15 | blue /purple, occ. white | central Wash. to Calif. e. to central Utah |
| 2. Leaflets 6-8, corolla white, plants of central Utah and western Colorado | | | | | | |
| 7-16 | 2-6 r | 5-10 | 2-4 | 10-15 | white | central Utah |
| 1. Tendrils of upper leaves reduced to simple bristles less than 1 cm long, stems often less than 3 dm long, erect.. | | | | | | |
| 3. Leaflets 2-4, plants of eastern Wash. and adjacent Idaho | | | | | | |
| 5-15 | 3-6 r | 2-3 | 2-4 | 8-10 | pink to blue | e. Wash. to Flathead Co., Mont. |
| 2-5 | 10-30 r | 2-3 | 2-4 | 8-10 | pink to blue | e. Wash. to Flathead Co., Mont. |
| 3. Leaflets 4-6; plants of central Washington south to Arizona and New Mexico | | | | | | |
| 4. Flowers 8-10 mm long, racemes from distal internodes on stems; plants of eastern flanks of the Cascade | | | | | | |
| 2-5 | 8-15 r | 2-4 | 2-4 | 7-10 | white | central Wash. to ne. Calif. |
| 4. Flowers 10-15 mm long, racemes from the middle internodes of stems; plants of Utah, Colo., and Ariz. | | | | | | |
| 4-15 | 2-5 r | 3-5 | 2-5 | 10-15 | white | s. Utah, sw. Colo., n. Ariz., nw. New Mexico |
| 2-5 | 6-35 r | 3-5 | 2-5 | 10-15 | white | s. Utah, sw. Colo., n. Ariz., nw. New Mexico |

the *V. ludoviciana* complex] are very efficient selfers", there is the much stronger tendency toward autogamy in populations delimited as subsp. *leavenworthii*: styles and anthers in flowers of subsp. *leavenworthii* are shorter and pollination takes place before the flowers open completely and peduncles are fully elongated. This tendency probably explains why populations of subsp. *leavenworthii*, geographically sympatric with other members of the species complex in Oklahoma and east Texas, have always been

recognized, while other morphological variants within the *V. ludoviciana* complex in Texas — *V. texana* T. & G., *V. occidentalis* Shinnery, and *V. laxiflora* Shinnery — included in *V. ludoviciana sensu* Lassetter (1984) intergrade. Herein I propose varietal names for the subspecies described by Lassetter (1984).

Vicia ludoviciana var. *ludoviciana* includes populations from California (*V. exigua* Nutt. ex T. & G.), populations distributed across the southwest from Arizona and Colorado east to

TABLE 3. EXTENDED.

| Leaflet width (mm) | Leaflet L/W ratio | Inflorescence length (cm) | Number of flowers | Flower length (mm) | Distribution |
|--|-------------------|---------------------------|-------------------|--------------------|--|
| 1. Leaflets generally 7-10; flowers opening after peduncles and internodes elongate, young fruit not present when flowers first open. | | | | | |
| (1)2-5(11) | (2)3-5(8) | (2)2-6(11) | (1)4-9(19) | (4)5-7(8) | e. Tex. e. to Alab. |
| (1)2-4(6) | (2)4-8(15) | (1)3-6(11) | (1)2-6(10) | (4)5-6(7) | s. Tex. |
| (1)2-3(6) | (4)6-11(16) | (2)3-6(11) | (1)4-9(19) | (4)5-7(8) | S. Calif. to Baja |
| 1-2(4) | (3)6-10(16) | (0)1-4(5) | 1-3(5) | (5)6-7(8) | Ariz., sw. Utah, Colo., Okla., w. Tex. |
| 1-4(8) | (2)4-8(10) | (1)3-10(15) | (1)5-15(17) | (5)6-7(9) | e. central Tex. |
| 1. Leaflets often 11-15; flowers opening before peduncles and internodes elongate, often containing young fruits when first open; leaflets often 11-15. | | | | | |
| (1)2-4(6) | (2)3-5(7) | (1)3-6(9) | (1)2-4(6) | (4)5-7(8) | e. Tex., Okla. |
| (4)6-9(11) | 2-3 | 3-7(9) | 1-2 | (4)5-7(8) | Ark. Louis. |

TABLE 4. MORPHOLOGICAL VARIATION IN *VICIA NIGRICANS* HOOKER & ARNOTT SENSU LATO. Data from Lassetter and Gunn (1979) and collections in OSC, ORE, and WILLU.

| Variety | Plant height (dm) | Stipule length (mm) | Stipule width (mm) | Rachis length (cm) | Number of leaflets | Number of flowers | Flower length (mm) | Calyx length (mm) | Pod length (mm) | Pod width (mm) | Distribution |
|--|-------------------|---------------------|--------------------|--------------------|--------------------|-------------------|--------------------|--------------------|-----------------|----------------|--|
| 1. Stems generally > 20 dm in length, leaflets 6-14 in number. <i>nigricans</i> | 20-30 | up to 14 | up to 7 | 5-23 | 6-14(18) | 4-25 | 13-24 | 1/4-1/3 of corolla | 37-46 | 8-10 | montane central Chile |
| 1. Stems generally < 20 dm in length, leaflets > 14 in number. <i>gigantea</i> | 6-20 | up to 25 | up to 15 | 9-23 | 16-29 | 6-19 | 10-15 | 1/2 of corolla | 33-55 | 10-20 | coastal: san Luis Obispo Co. Calif. to Sitka, Alaska |

central and west Texas (*V. producta* Rydb.), as well as the populations found from central Texas east into Louisiana (*V. ludoviciana* s.s.). Lassetter (1984) has described five morphological races within *V. ludoviciana* var. *ludoviciana*; differences among these races are summarized in Table 3. The distribution of these taxa is well documented in Lassetter (1984).

***Vicia ludoviciana* Nutt. ex T. & G. var. *leavenworthii* (T. & G.) Broich comb. nov.** *Vicia leavenworthii* T. & G. Fl. N. Amer. 1:271. 1838. *Vicia leavenworthii* var. *typica* Shinners. Field and Lab. 16:22. 1948. *Vicia ludoviciana* subsp. *leavenworthii* (T. & G.) Lassetter & Gunn, USDA Tech. Bull. No. 1601:16. 1979. Type: USA; Arkansas, [Co. unknown], *Dr. Leavenworth s.n.* (holotype NY!). *Cracca erotanthos* Alefeld. Bonplandia 9:118. 1861. Type: *Hale, s.n.* [sent to Alefeld by Dr. Hexamer of New York], (location unknown).

Vicia ludoviciana var. *leavenworthii* includes two races: one form confined mostly to central and eastern Texas, the other, a robust race with large ovate leaflets and only 1-2 cleistogamous flowers per raceme, found in Arkansas, Louisiana and Mississippi (Table 3).

VICIA NIGRICANS H. & A.

On the basis of morphological similarities, similar habitats, and identical karyotypes, Lassetter and Gunn (1979) have proposed that North American Pacific Coast species *Vicia gigantea* Hook. is conspecific with *V. nigricans* H. & A. of South America and referred to populations of *V. gigantea* as *V. nigricans* subsp. *gigantea* (Hook.) Lassetter & Gunn. Isely (1998) retains the name *Vicia gigantea* Hook. at the specific level. Herein I propose the new combination *V. nigricans* H. & A. var. *gigantea* (Hook.) Broich.

Vicia nigricans var. *nigricans* generally has longer stems, fewer leaflets, and larger flowers (Table 4). It is found in the mountains of central Chile and extreme western Argentina and is usually associated with the austral *Nothofagus* forest (Lassetter and Gunn 1979). *Vicia nigricans* var. *gigantea* is mostly restricted to coastal areas of North America from San Luis Obispo Co., California, to Sitka, Alaska. Variety *gigantea* also occurs inland along the Columbia River and in the Willamette Valley to the foothills of the Cascades in western Oregon.

***Vicia nigricans* H. & A. var. *gigantea* (Hook.) Broich comb. nov.** *Vicia gigantea* Hook., Fl. Bor. Am. 1:157. 1831. *Vicia nigricans* subsp. *gigantea* (Hooker) Lassetter & Gunn, Pacific Science 33:97. 1979. Type: in open wood, common Northwest America, *Douglas s.n.* (K).

Vicia sitchensis Bong., Mem. Acad. Sci. St. Peters., ser. 6, 129–130. 1833. Type: no specimen cited, no known lectotype designated.

Vicia hookeriana Walpers, Rep. Bot. Sys. 1:715–716. 1842. Type: no specimen cited, no known lectotype designated.

Lathyrus cinctus S. Wats., Proc. Amer. Acad. Arts Sci. 23:263. 1889. Type: "Jolon", Monterey Co., *T. Brandegea* in 1886 (GH)

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